

## A New Species of *Hymenophyllum* from Central America

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The Filmy Fern genus *Hymenophyllum* includes an interesting and closely knit complex of species, treated by C. V. Morton (1947) as sect. *Sphaerocionium*, subsect. *Lanata*. Morton (1968) revised the classification of Hymenophyllaceae and placed this group in subg. and sect. *Sphaerocionium*, subsect. *Hirsuta*. The latter is distinguished by the following characteristics: segment margins entire rather than toothed; blades bearing stellate trichomes on the leaf surface between, as well as on, the veins; and veins lacking accessory wings not in the same plane as the leaf. The group contains 20-25 species, which occur chiefly in the neotropics.

While studying subsect. *Hirsuta* for "The Flora of Guatemala," I came upon a new species of *Hymenophyllum* represented by specimens previously undetermined or misidentified as *H. sieberi* (Presl) v. d. Bosch or *H. trapezoidale* Liebm. A few of those determined as *H. sieberi* had been annotated by Morton; perhaps he (1947, p. 180) was referring to these when he said, "Some of the Guatemalan specimens are more or less aberrant."

### *Hymenophyllum crassipetiolatum* Stolze, sp. nov.

Figs. 1, 3.

Rhizoma repens; folia indeterminata, 12-42 cm longa, 3-8(10) cm lata; petioli 4-11(16) cm longi, (0.5)0.6-0.9 mm crassi, non alati; laminae anguste lanceolatae vel ovatae, rhachidibus late alatis, rarius ad basin non alatis; pinnae plerumque bipinnatifidae, late alatae; pinnulae pinnatifidae, pinnulae apicales bifidae vel simplices; segmenta ultima integra; trichomata in venis et in superficiebus foliorum stellata, sessilia, trichomata marginalia radiis 4-6 plerumque adpressis et versus apicem segmenti flexis; indusia saepe latiora quam longa, trichomatibus simplicibus vel bifurcatis instructa.

TYPE: Slopes of Volcán Gemelos, Dept. Zacapa, Guatemala, 1942, *Steyermark* 43302 (US; isotypes F, GH).

Pendent from tree trunks, or growing on moist banks, in deep shade in cloud forests, 1,250-3,300 m. Known from Mexico (Chiapas), Guatemala, Honduras, and El Salvador.

Rhizome wiry, long-creeping, provided with simple, reddish to light brown trichomes; leaves subdistant on the rhizome, indeterminate, pendent, mature ones 12-42 cm long, 3-8(10) cm wide; petiole 4-11(16) cm long, (0.5)0.6-0.9 mm in diameter, nonalate (although the basal pinna sometimes short decurrent), sparsely to abundantly provided with simple, bifid, or (mostly) stalked, stellate trichomes; lamina ovate or, more commonly, narrow-lanceolate, not reduced at base, or the lower 1-4 pairs of pinnae somewhat shorter; rachis broadly alate throughout, or nonalate at the base, the wings plane to slightly crispate, sparsely or abundantly provided with sessile or subsessile, stellate trichomes; pinnae commonly bipinnatifid, the costae broadly alate; pinna segments 4-12 pairs, the larger ones deeply pinnatifid, the apical ones bifid to simple, ultimate segments plane or slightly

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FIG. 1 Holotype of *Hymenophyllum crassipetiolatum*, Steyermark 43302 (US).



undulate, entire, veins and leaf surfaces sparsely to abundantly provided with sessile-stellate trichomes; marginal trichomes abundant, sessile-stellate (rarely minutely stalked), most of the 4-6 stout rays commonly appressed and directed toward the segment tip; indusium as broad or broader than the ultimate segment, not or scarcely immersed in the segment tip, the valves as broad or broader than long, their margins provided with simple or bifurcate trichomes.

#### SELECTED SPECIMENS EXAMINED:

**MEXICO: Chiapas:** *Matuda* 5233 (F). **GUATEMALA: Alta Verapaz:** Finca Los Alpes, ca. 4000 ft, *Wilson* 352 (F). **Baja Verapaz:** Sierra de las Minas ca. 5 km S of Purulhá, 1600 m, *L. O. Williams et al.* 41976 (F). **Chiquimula:** Cerro Brujo, SE of Concepción de las Minas, 1700-2000 m, *Steyermark* 31034 (F, GH, US). **El Progreso:** Between Finca Piamonte and the summit of Volcán Sta. Luisa, 2400-3333 m, *Steyermark* 43546 (F, US). **Zacapa:** Between Loma El Picacho and Cerro de Monos, 2000-2600 m, *Steyermark* 42795 (F, US). **HONDURAS: Morazán:** Dry slopes of Mt. San Juancito, near El Rosario, 1400 m, *Molina* 23402 (F). **Ocotepéque:** Mt. Cocal, 20 km NW of Ocotepéque, 1800 m, *Molina* 22100 (F). **EL SALVADOR: Chalatenango:** East slope of Los Esemiles, ca. 2430 m, *Tucker* 1062a (F). **Santa Ana:** Montaña Montecristo, 2100 m, *Molina & Molina* 12488 (F).

The comparatively thick petiole of this species is one of its most distinctive features. The petiole diameter of most *Hymenophyllum* species is less than 0.5 mm, and frequently is only 0.1-0.2 mm. Noteworthy also is its luxuriant, highly dissected leaf blade, which often attains lengths of over 40 cm. In larger primary segments (pinnules) of most pinnae, the veins are pinnately arranged, so that the pinnae are essentially bipinnatifid. (In more distal pinnae the primary segments are merely bifid or simple.)

Some other characteristics in *H. crassipetiolatum* are subtle, but important. The indusial valves vary somewhat in dimension, occasionally they are suborbicular or sometimes slightly longer than broad, but most commonly the valves of mature indusia are broader than long. The stellate trichomes of the segment margins are sessile (rarely very short-stalked), with 4-6 stout rays closely appressed along the margin and most of them bent toward the segment tip (*Fig. 3*). The marginal stellate trichomes of many similar species appear much more delicate and have long slender stalks with filiform rays that spread in a more random pattern. (*Fig. 2*).

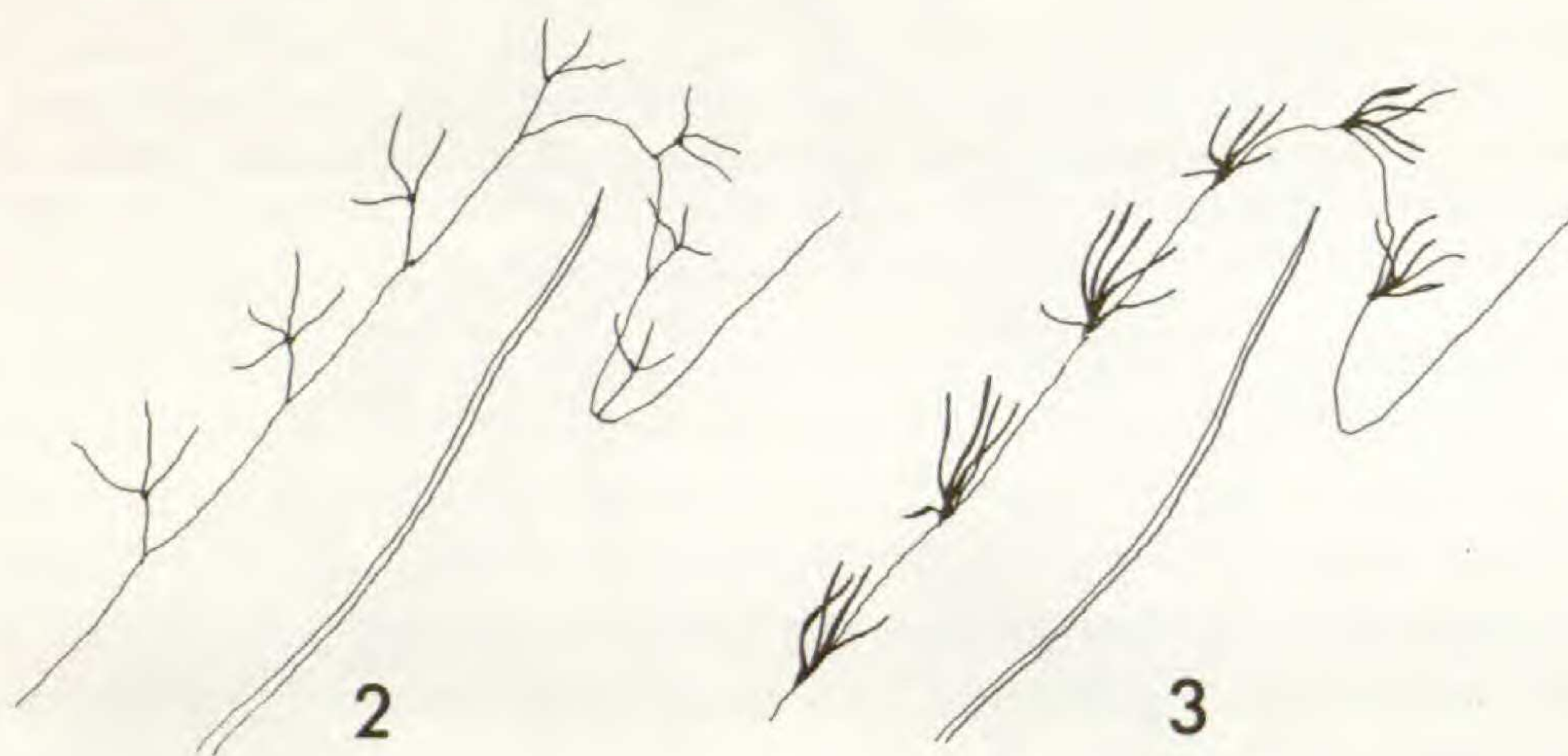
In Mexico and Central America, the affinities of *H. crassipetiolatum* are with *H. sieberi*. The two may be readily separated by a number of characteristics, including those in the following key:

- Petioles (0.5)0.6-0.9 mm in diam. not alate; pinnae essentially bipinnatifid; marginal trichomes stout, stellate, sessile, the rays mostly appressed and bent toward the segment tip; indusial trichomes simple to forked; indusia mostly broader than long; plants growing at 1,250-3,300 m altitude. .... *H. crassipetiolatum*
- Petioles 0.3-0.5 mm in diam., alate at the apex or in the upper half; pinnae essentially pinnatifid; marginal trichomes delicate, stellate, stalked, the rays spreading; indusial trichomes forked to stellate; indusia mostly longer than broad; plants growing at 950-1,600 m altitude... *H. sieberi*

Although *H. crassipetiolatum* frequently has been identified in herbaria as *H. trapezoidale*, the two belong to different subsections. The blades of the latter are glabrous between the veins and the margins, the rachises are nonalate in the lower portion of the blade, and the marginal trichomes are simple, bifurcate, or stalked-stellate with 3 delicate rays.



Three South American species perhaps are more closely related to *H. crassipetiolatum* than any of the Central American species: *H. lindenii* Hook., *H. interruptum* Kunze, and *H. plumieri* Hook. & Grev. *Hymenophyllum lindenii* is one of the few with petioles nearly a full millimeter in diameter, but the rachis is nonalate in the lower portion of the blade and indusial trichomes are predominantly stalked-stellate, whereas those of *H. crassipetiolatum* are simple or bifurcate. Both *H. plumieri* and *H. interruptum* have more delicate petioles and their blades are less highly dissected. The latter has groups of fertile pinnae often separated by several sterile ones, and *H. plumieri* has the petiole alate at the apex.



FIGS. 2-3. Trichomes on segment margins of *Hymenophyllum*. FIG. 2. *Hymenophyllum sieberi*. FIG. 3. *Hymenophyllum crassipetiolatum*.

In spite of Morton's past work with the family and genus, *Hymenophyllum* still poses many interesting problems in taxonomy. The plants are small and often inconspicuous, and grow primarily in the deep, dense forests, so undoubtedly there will be new discoveries as additional collections are made.

#### LITERATURE CITED

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